

College of the Holy Cross

# The Effect of Gender Quotas on the Composition of the Board of Directors

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## **Abstract**

In September 2018, California amended the State Corporation Code to promote gender equality in the board of directors. This law applied to all publicly traded corporations that had their principal executive office in the state of California according to the SEC. These companies had to have the minimum number of women directors on their board by certain deadlines and if not then they would be fined \$100,000. I estimate the effect of the quota system on the change of female and male directors on the board and the location of the principal executive office. My model will look at if the quota was successful in promoting more gender equality on the board of directors for publicly traded corporations in California.

## **Introduction and Background**

Throughout history, we have seen how females have faced discrimination and gender inequality in their daily lives. Gender discrimination and inequality are seen in many different aspects of the world such as in education, domestic violence, sexual violence, and the workforce. There is huge gender inequality in the workplace with unequal pay, sexual harassment, unfair opportunities for promotion, and the fear of speaking up. Globally women make up 39% of the workforce but accounted for 54% of the jobs lost in the pandemic (White, 2020).

Gender inequality is something that we see in our daily lives: uneven access to education, job segregation, legal protection, and certain medical care. Gender inequality is in many different aspects of the labor force and there is a large academic literature on this topic. What if I told you that it would take 100 years for women to get to a place where there is gender equality in the workplace? This is a prediction made from the 2020s Global Gender Gap report. However, because of COVID-19, it was pushed back another 10 years so it will take 110 years to see gender equality in the workplace. This is a global issue and is not just something that the United States is struggling with. Women earn 84% of what men earn while men also have more job opportunities than women. In the United States, women make up 69.1% of the labor force but only make up 8.2% of CEOs (Flynn, 2022). Gender inequality has been a problem for many years and it is slowly becoming better but not at a quick enough rate.

Given these problems with inequality, governments at all levels have tried to create policies and quotas that would require a certain number of women directors on the board. One successful example of this is in Norway. The Norwegian government put a quota in place that required all companies to have a certain number of women directors or these companies would be dissolved or asked to move their headquarters to a different country. Matsa and Miller (2013)

found that this quota increased the percentage of women directors from 18% to 40%. The quota system has been observed in other different European countries too, mainly France and Spain.

The first time this quota system has been observed in the United States is California. California is introducing the quota system that has been seen in other European countries. It is valuable that California is putting in this quota as it has the third highest number of headquarters in the United States (Boss, 2019). California amended their state Corporation Code in September of 2018. This required all publicly traded corporations that had their headquarters in California to have a minimum number of female directors on their board depending on the size by the end of 2019. This quota system can be observed because it was estimated that 83% of firms would have needed to change their board members in the next three years to comply with the new law (Steele, 2020).

## **Previous Literature**

Quotas for women at the level of the board of directors represents one type of policy aimed at decreasing inequality although these inequalities affect each woman differently depending on what sector women want to work in, our race, religion, and class. It has been very difficult for governments and firms to focus and figure out where the gaps and inequalities lie for women in the labor force so the focus has tended to be on women at the board level. Focusing on women at the board level is extremely valuable as it allows us to analyze different elements of the firm and its performance. When looking at a firm and its performance, one might be curious about the direct effects that women have on a company and its performance when we look at the number of board members. We are also looking for a change and seeing if we can see gender equality sooner. If we focus and try to increase the number of women at the board level it will

cause a trickle-down effect and balance out the rest of the company. It can break certain stereotypes and allow for change that is not happening quickly enough. Women board members also tend to hire more females. In a recent paper, Matsa and Miller (2011) shows the effect of having more females on the board will positively affect the female numbers of the rest of the firm and increase the firm's performance.

When looking at different industries, we would expect that each industry has different gender compositions. For example, if we look at the fashion industry we could expect that they have more female CEOs than the engineering and oil industry. Communication services, real estate, and health care have the largest percentage of women on the board while finance and information technology have the lowest. A recent paper by Donna Bobbitt researches the effect of gender stereotypes and women's experiences in the workplace. They collected and researched cases of sex discrimination filed with the OCRC. They found that there were more accounts of discrimination when there were fewer policies in place and this occurred in settings where it was more male-dominated. A possible reason for this is that men in male-dominated settings feel as if women are 'invaders'. This gender inequality is a big problem and has been going on for a long time but, will the laws passed and quota systems put in place promote change and allow for women to have a fair chance to be represented as board members regardless of the industry? An example of a study done, Martínez (2016), explains the advantages of having women on the board and how it affects the overall performance of a firm. It found that women will increase the firm's performance until it reaches a certain threshold of women on the board. When the percentage of women reaches the threshold, they start to have a negative effect on the firm's value. This can be a result of pressure-resistant female institutional directors. It also looks at the advantages of having women on the board and this is because women are more likely to ask

more questions, increase the overall firm's performance and women genuinely go for the low-risk options.

Many different countries have put quota systems in place and tried to fix the gender imbalance of board members. Many European countries put the quota system in place in the early 2000s while countries like Australia only put them in place in 2018. In a paper by Melanie Huges (2011), she explains the variation in quota systems put in place in different countries and how each of them has adopted them respectively. We can see that different countries have put quota systems in place but the enforcement varies and the effectiveness depends on what type of enforcement they put in place. For example, Norway's quota was more successful than the quota put in Spain as the company would be dissolved if they did not add female directors to the board and in Spain there was no punishment. In a paper by Antoine and Gwenael (2019), they researched if the quota put in place in France in 2011 was successful. They found that there was an increase in the number of female board members when the quota was put in place. The quota was put in place in France in 2011, by 2017 each company would have to have at least 40% of each gender represented on the board.

Adam and Frank (2012), found that the diversity of the board has a positive effect on the firm's performance however the experience in Norway is different. Norway is a country that has been recognized for its effects in changing the diversity of the board of directors and many different studies have been done on the quota that was fully enforced in 2008. Two papers by Ahern and Dittmar (2012) and Matsa and Miller (2013), found that there was a negative effect on the firm's performance when there was more diversity on the board. It suggests that the link between a firm's performance and diversity is not straightforward as it may seem and could be hard to calculate. My application for my paper is very similar to Matsa and Miller (2013), which

researched the effect of the gender quota on corporate decision-making in Norway. Their estimate approach relied on a triple difference-in-difference strategy across Nordic countries, and listed and non-listed companies. They found that the short-run profitability decreased when the quota was adopted but that the number of females on the board doubled from 18 to 40%. The firms were more likely to increase labor force and employment levels which negatively affected their profitability. There were many mixed results found in Norway with gender diversity and firm performance. The quota will affect different countries differently depending on the economy and social standards.

In this paper, I researched the effect of the quota system in the state of California and if it was able to change the diversity of the board by putting a quota system in place. California made it mandatory for firms, if their principal executive office is based in California, to have a certain number of female board members depending on the size of their company. If a company has 6 or more board members then 3 have to be female, 5 board members then 2 have to be female and if less than 5 then 1 has to be female. The goal of my paper is to see if firms complied with the requirements or if they moved their executive office to a different state to not comply with the requirements. And, if putting the quota system in place would cause corporations to increase the number of female board of directors. I used a difference-in-difference strategy between firms that had to comply with the quota and firms that didn't have to. This allowed me to determine the effect of the quota on different corporations in California and in different states. I would like to see if the quota had an effect and if it will be the first step in creating change in the United States. Firstly my paper will contribute to the literature as we have not seen how the quota system has affected the diversity of a firm and the location of the principal executive office in the United States and I have fresh evidence as the law was just put in place in California. In previous

literature we have looked at different countries as a whole but it is much easier to move headquarters between states than countries so California will give us a different perspective.

There are many different conclusions regarding the quota system and if it negatively or positively affects the firm's performance and how women contribute to the firm. My paper will be filling in the gaps with how the quota system affects US firms and if certain companies move their executive offices out of state to not comply with the law.

## **Data**

There are approximately 4,471 public companies based in California where 678 have their executive office based in the state of California (Coffee, 2022). The difference is that the executive office is where all the board of directors are based. Only 11% of those companies have been said to be in compliance with the laws put in place in 2018. In total, I chose 200 corporations, of which 100 of them had their executive office based in the state of California while the other 100 corporations had their executive office based in different states. I chose the top 100 corporations from a list of California's 400 Largest Public Companies Ranked by Location, I chose the top 100 based on their market capitalization. From the 200 corporations that were chosen, I researched where their principal executive office was based before and after 2018. This gave me the information in which I was able to run my first regression, which would see if California and non-california corporations moved their executive office after the quota was announced.

This project uses data that was collected from Audit Analytics on corporations that had their principal executive offices in the state of California and corporations that had their principal executive offices in different states. The data that was collected from Audit Analytics was the



percentage of women and men on the board of directors in each of the corporations. The data was collected over the time period from 2010 to 2021. For each year, the change of women and men directors were collected from the SEC filings. While running my regression and collecting the different information on each corporation, I was only able to run the regression on 174 corporations due to the fact that I was not able to find the change of the board of directors each year.

I decided to look at the location of each corporation before and after the announcement so I could compare if the companies decided to move their principal executive office out of the state of California so they did not have to add female directors to their board. I did the same for the corporations that had their principal executive office in different states so I could compare my results. The announcement was made in September of 2018 so I collected their location information before 2018 and after 2018.

For the change of directors on the board, I looked at each corporation separately from 2010 to 2021. I chose this time period because it would allow me to compare the amount of women added to the board of directors before the change of the Corporation Code was announced to the amount of women added to the board of directors after the announcement was made. I was able to gather data on each corporation on Audit Analytics. I collected the number of women and men added to the board of directors each year from 2010 to 2021. Table 1 is an example of a corporation, Chevron, that is based in California. From this, one can see the company's name, year and the number of women and men added to the board of directors.

Below I have included a summary statistic of each variable and regression:

Variable	Obs	Mean	Std. Dev.	Min	Max
Year	1,932	2015.5	3.452946	2010	2021
Women	1,932	.2883023	.5425526	0	3
Men	1,932	.505176	.8505484	0	9
Location	1,932	.4140787	.4926897	0	1
post	1,932	.25	.4331248	0	1
Effect	1,932	.1024845	.3033639	0	1
_Iyear_2011	1,932	.0833333	.276457	0	1
_Iyear_2012	1,932	.0833333	.276457	0	1
_Iyear_2013	1,932	.0833333	.276457	0	1
_Iyear_2014	1,932	.0833333	.276457	0	1
_Iyear_2015	1,932	.0833333	.276457	0	1
_Iyear_2016	1,932	.0833333	.276457	0	1
_Iyear_2017	1,932	.0833333	.276457	0	1
_Iyear_2018	1,932	.0833333	.276457	0	1
_Iyear_2020	1,932	.0833333	.276457	0	1
_Iyear_2021	1,932	.0833333	.276457	0	1

  

Variable	Coef.	Std. Err.	t	Min	Max
company	-0				
switched	174	.045977	.2100397	0	1
location	174	.4827586	.5011448	0	1

## Empirical Study

My empirical strategy for this paper consists of two different regression models. I will first run a regression for the Location of the Executive Offices and then I will run a difference-in-difference regression for the change of women and men across the board of directors from 2010 to 2021. My three different regression equations are:

$$\text{Switched} = \alpha + \beta_1 \text{Location} - \varepsilon \quad (1)$$

$$\text{Women} = \alpha + \beta_1 \text{Location} + \beta_2 \text{post} + \beta_3 \text{effect} + \varepsilon \quad (2)$$

$$\text{Men} = \alpha + \beta_1 \text{Location} + \beta_2 \text{post} + \beta_3 \text{effect} + \varepsilon \quad (3)$$

In the first regression the Switched variable represents the dependent variable which is the number of corporations that switched the location of their principal executive office out of state after 2018. These variables equal one if the corporation switched the location of its headquarters and zero otherwise. In the data, the location of the principal executive offices are represented by either a 1 or a 0. The corporations that had their principal executive offices in the state of California were allocated a 1 and the corporations that had their principal offices in other states were allocated a 0.

The difference-in-difference model is represented by the second and third regression equations. The dependent variable is the change in women and men directors on the board respectively. The variable post is representing the years before and after the quota was put in place. The years before the quota, 2010 to 2019, were assigned a 0 and the years after the quota, 2019 to 2021, were assigned a 1. Refer to Table 1 which is an example of the data. When looking at the table, it shows the change in women and men board directors for each year and the change in location of the principal executive office. For example, Chevron increased the number of

women board members in 2012, 2016, 2018 and 2020. The location of Chevron's principal office did not change so for each year location is assigned a 1. The variable effect was generated from location and post. Effect is the multiplication of the two variables, effect is either given a 0 or 1 depending on the numeral values assigned to location and post.

For my regression, I have fixed effects which are the year. One can replace the post variable with year in my regression because there are year fixed effects. The effect variable is 1 in California after 2018 and zero otherwise.

Through these regressions I am able to see if corporations in California moved their headquarters out of the state of California to not comply with the quota and if the quota was successful in increasing the number of female directors on the board.

## **Results**

### **Location of the principal executive office**

Table 4 represents the results of the first regression equation that looks at if the corporations switched their location of the principal executive office. The coefficient of location is -0.137 which means that Californian firms were 13.7 percentage points more likely to switch their headquarters than non-Californian firms over this time period. . This coefficient is statistically significant as the p-value is 0.002, this suggests that. The overall r-squared value is 0.05 which is very small.

The number of California corporations that moved their headquarters to a different state was 13.7%. There could be many reasons why this occurred but it was significantly higher than the

non-california corporations which could indicate that it was because of the law. Although, this could be a sign of external validity.

### **Change in the women directors on the board**

Table 2 represents the results from the difference-in-difference model. This regression measures the effect of the quote system on the change in female directors on the board. The r-squared value in the table is equal to 0.1393. The coefficient on the effect variable is positive and equal to .0855 which suggests that the effect of the law was to make a California company 8% more likely to add a woman to the board of directors than a non-California company. When looking at the coefficients for each year, we are able to see that there was a greater increase in female directors from 2019 to 2021 compared to 2010 to 2018.

### **Change in the men directors on the board**

Table 3 represents the results from the difference-in-difference model. This regression measures the change of men directors on the board. The coefficient on the location variable is negative and equal to 1.37. The coefficient on the effect variable is equal to .16. This shows that there was an increase of 16% more likely to add a male than a non-Californian company.

## **Discussion and Conclusion**

California's law amended the State Corporation Code ( Chapter 954, §§ 301.3 and 2115.5 ) in hopes to change the gender composition of the board of directors. Even though the law was struck down during 2022, it was interesting to see if amending the State Corporation Code was effective in creating more gender equality throughout the board of directors.

Through my regressions I was able to find that there was an increase in both women and men directors on the board. For the change of female directors, there was a higher increase after the quota was put in place. Although there was an increase in male directors, a possible reason for this is that corporations did not want to get rid of their male directors that had been on the board previously. They understood they had to increase the number of female directors on the board but they did not decrease the number of male directors. In a previous paper, that researched the effect of the quota on companies in Norway, found that the short-run profitability of the firm decreased because instead of decreasing the number of male directors, the firms increased the number of board of directors. This could be a similar explanation for the increase in male directors and female directors.

Looking at my paper, I would like to improve the regression analysis to specifically look at all different states separately and include a comparison between public and private corporations. To further look at the firms individually, I could control for the size of each company and see how that might affect the change in number of male and female directors. Doing this, it could help me better understand each corporation individually and give me a better idea of how the law affected the diversity of the board of directors. The main research question I have after doing this paper is if the California corporations moved their headquarters to different states because of the quota or if there were other reasons like higher taxes.

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**Table 1: Example of Data**

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Company's Name	Year	Women	Men	Location	Post
CVX	2010	0	0	1	0
CVX	2011	0	0	1	0
CVX	2012	1	0	1	0
CVX	2013	0	0	1	0
CVX	2014	0	0	1	0
CVX	2015	0	0	1	0
CVX	2016	2	0	1	0
CVX	2017	0	2	1	0
CVX	2018	1	1	1	0
CVX	2019	0	4	1	1
CVX	2020	1	1	1	1
CVX	2021	0	1	1	1

**Table 2: Change in Women Directors**

Source	SS	df	MS
Model	79.2059819	13	6.09276784
Residual	489.20965	1,918	.255062382
Total	568.415631	1,931	.294363351

  

Women	Coef.	Std. Err.	t	P >  t	[ 95% Conf. Interval]
location	-0.398207	.0269228	-1.48	0.139	-.0926218 .0129804
_Iyear_2011	.0807453	.0562892	1.43	0.152	-.0296492 .1911399
_Iyear_2012	.0621118	.0562892	1.10	0.270	-.0482827 .1725063
_Iyear_2013	.1180124	.0562892	2.10	0.036	.0076179 .2284069
_Iyear_2014	.1180124	.0562892	2.10	0.036	.0076179 .2284069
_Iyear_2015	.2049689	.0562892	3.64	0.000	.0945744 .3153635
_Iyear_2016	.1987578	.0562892	3.53	0.000	.0883632 .3091523
_Iyear_2017	.2484472	.0562892	4.41	0.000	.13805527 .3588417
_Iyear_2018	.3103117	.0562892	5.51	0.000	.1999167 .4207067
_Iyear_2019	.4305029	.0605052	7.21	0.000	.31184 .5491658
_Iyear_2020	.4615588	.0605052	7.63	0.000	.3428959 .5802217
_Iyear_2021	.6727389	.0605052	11.12	0.000	.554076 .7914018
effect	.0855942	.0539258	1.59	0.113	-.0201651 .1913535
_cons	.0538384	.0413493	1.30	0.193	-.0272559 .1349328

**Table 3: Change of Male Directors**

Source	SS	df	MS
Model	110.497795	13	8.49983037
Residual	1286.45045	1,918	.670724945
Total	1396.94824	1,931	.723432543

  

Men	Coef.	Std. Err.	t	P >  t	[ 95% Conf. Interval]
location	-.1377308	.0436586	-3.15	0.002	-.2233541 -0521075
_Iyear_2011	.1242236	.0912797	1.36	0.174	-.0547943 .3032415
_Iyear_2012	.136646	.0912797	1.50	0.135	-.042372 .3156639
_Iyear_2013	.2360248	.0912797	2.59	0.010	.0570069 .4150428
_Iyear_2014	.2173913	.0912797	2.38	0.017	.0383734 .3964092
_Iyear_2015	.4099376	.0912797	4.49	0.000	.23092 .5889558
_Iyear_2016	.3043478	.0912797	3.33	0.001	.1253299 .4833658
_Iyear_2017	.2732919	.0912797	2.99	0.003	.094274 .4523099
_Iyear_2018	.464983	.0912801	5.09	0.000	.2859643 .6440018
_Iyear_2019	.3349249	.0981164	3.41	0.001	.1424988 .5273511
_Iyear_2020	.3846144	.0981164	3.92	0.000	.1921882 .5770405
_Iyear_2021	.8815088	.0981164	8.98	0.000	.6890827 1.073935
effect	.1657478	.0874471	1.90	0.058	-.0057536 .3372492
_cons	.2312296	.0670529	3.45	0.001	-.0997254 .3627338

**Table 4: Switched Locations**

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Source	SS	df	MS
Model	.39408867	1	.39408867
Residual	7.23809524	172	.042081949
Total	7.63218391	173	.04411667

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switched	Coef.	Std. Err.	t	P >  t	[ 95% Conf.	Interval]
location	-.1377308	.0436586	-3.15	0.002	-.2233541	-0521075
_cons	.1242236	.0912797	1.36	0.174	-.0547943	.3032415

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